

REMARKS

Summary of Claim Status

Claims 1, 4, 6-11, 14, 17, 19, and 20 are pending in the present application after entry of the present amendment. Claims 1, 4, 6-11, 14, 17, 19 and 20 are rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement. Claims 1, 4, 6-11, 14, 19 and 20 are rejected under 35 U.S.C. § 103(a) as being obvious over Fehr et al. (U.S. Patent 5,436,407, "Fehr") in view of McShane et al. (U.S. Patent 5,105,529, "McShane"). Claim 17 is rejected under 35 U.S.C. § 103(a) as being obvious over Fehr and McShane and further in view of Murayama et al. (U.S. Patent Application 2001/0009302, "Murayama"). Applicants respectfully request favorable reconsideration of the claims and withdrawal of the pending rejections in view of the following amendments and remarks, which are believed to place the application in form for allowance.

Rejections under 35 U.S.C. § 112

In response to the rejection of the claims under 35 U.S.C. § 112, first paragraph, Applicants have amended each of the independent claims 1 and 11 to overcome the rejection. In particular, Applicants have amended claim 1 to indicate that the adhesive secures the conductive lid to the substrate of the integrated circuit by "extending into said tapered through-hole" along a wall of the tapered through-hole. Applicants have similarly amended claim 11 to indicate that the adhesive secures the conductive lid to the substrate by "extending into the through-hole" along a surface of the through-hole extending substantially vertically from the substrate. Support for the amendments may be found at least in Fig. 5 and paragraphs [0018] and [0021]. Applicants believe that the rejection of the claims under 35 USC § 112 has been overcome, and that the rejection should be withdrawn.

Rejections under 35 U.S.C. § 103

In response to the rejection of claims 1, 4, 6-11, 14, 19, and 20 as being obvious over Fehr in view of McShane, Applicants have amended each of the

independent claims 1 and 11 to distinguish over the combination of references. In particular, Applicants have amended claim 1 to claim an integrated circuit comprising a substrate, and a die coupled to a first side of the substrate. Applicants have further amended claim 1 to indicate that the conductive lid has a foot portion extending from the top of the conductive lid to the first side of the substrate. Applicants have also amended claim 1 to indicate that the through-hole located in the foot portion extends from the top of the conductive lid to the substrate. Applicants have amended claims 4 and 6-10 in view of the amendments to claim 1. Support for the amendments may be found at least in Figs. 3 and 5 and the corresponding text in paragraphs [0019] and [0021].

The primary reference Fehr is directed to a metal semiconductor package comprising a lead frame and an external plastic seal. Referring specifically to Fig. 3 cited in the Office Action, Fehr discloses a semiconductor die 28 coupled by a bond wire 32 to a lead frame 26. The lead frame is coupled to a flange 43 of a base 42 and a flange 45 of a cap 44 by an adhesive 46. The through-holes 62 of the flanges shown in Fig. 3 may be employed to receive the adhesive 46. However, in contrast to Applicants' claim 1, Fehr fails to disclose a die and a conductive lid coupled to a substrate. Rather, Fehr discloses a cap for a device which is coupled to a lead frame. McShane, which is cited for disclosing a tapered shape of a through-hole, teaches away from the use of an adhesive in a recess by teaching the use of a corresponding locking feature of the body package coupled to the recess, while an adhesive is instead used between the heat sink and the mounting surface. (Col. 3, line 50 – Col. 4 line 3). More importantly, McShane also fails to disclose or even suggest that a die and a conductive lid are each coupled to a first side of a substrate. In contrast, McShane teaches the coupling of a heat sink 24 to one side of a mounting surface 14, and attaching a semiconductor die to the other side of the mounting surface 14. Further, neither reference discloses a conductive lid having a foot portion with a through-hole extending from the top of the conductive lid to a substrate, as set forth in the amended claim 1. In contrast, Fehr shows a foot portion having the thickness of the lid, while the recess of McShane is not in a foot portion of a lid, but a heat sink attached to the opposite side of a mounting surface for the die. Applicants respectfully

submit that any combination of the references would not lead to the Applicants' claim 1 as amended, and respectfully requests reconsideration of the rejection of claims 1, 4 and 6-10 in view of the amendments to claim 1.

Applicants have also amended claim 11 to indicate that the die is positioned on a first side of the substrate, and a plurality of contacts are positioned on a second side of the substrate opposite the first side of the substrate. Applicants have further amended claim 11 to indicate that the foot portion of the conductive lid extends from the top of the conductive lid to the first side of the substrate. Support for the amendments may also be found at least in Figs. 3 and 5 and the corresponding text in paragraphs [0019] and [0021]. Applicants respectfully submit that claim 11 as amended clearly distinguishes over the combination of references.

In addition to failing to disclose or suggest a die positioned on a first side of a substrate and a conductive lid also coupled to the first side of the substrate, neither reference discloses or even suggests a conductive lid having a foot portion extending from the top of the conductive lid to the first side of the substrate for the same reasons set forth above with respect to independent claim 1. The references also fail to disclose or suggest a plurality of contacts for the integrated circuit positioned on a second side of the substrate opposite the first side of the substrate having the die. In contrast, both Fehr and McShane are directed to lead frame packages having contacts extending from the sides of the package. Applicants submit that the claims as amended clearly distinguish over the references, and respectfully request reconsideration of the rejections of claims 11, 14, 19, and 20 in view of the amendments to independent claim 11.

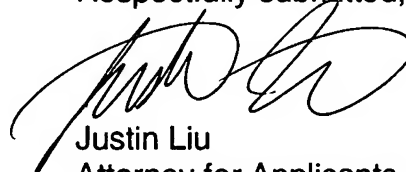
In response to the rejection of claim 17 as being obvious over Fehr and McShane in view of Murayama, Applicants respectfully traverse the rejection of claim 17. Murayama is cited for disclosing an adhesive material comprising a thermally conductive epoxy. However, Applicants submit that claim 17 is allowable for the same reasons that claim as amended 11 is believed allowable. However, among other deficiencies, Murayama also fails to disclose or suggest an adhesive extending into a through-hole, or a conductive lid having a foot portion extending from a top of the

conductive lid to a first surface of a substrate. Applicants respectfully request reconsideration of the rejection of claim 17 in view of the amendments to claim 11.

Conclusion

Applicants believe that the claims are now in allowable form. If any action other than allowance is contemplated by the Examiner, the Examiner is invited to telephone Applicants' attorney at 408-879-4641.

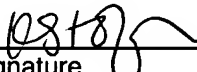
Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. BOX 1450, Alexandria, VA 22313-1450, on February 9, 2007

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